

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application of: YAMANOUCHI *et al.* Group Art Unit: To be assigned  
Serial No.: To be assigned Examiner: To be assigned  
Filed: April 5, 2001 Attorney Docket No.: 9885-009  
For: SPREAD SPECTRUM SIGNAL  
PROCESSING APPARATUS AND  
SPREAD SPECTRUM  
COMMUNICATION SYSTEM New York, NY  
April 5, 2001

**PRELIMINARY AMENDMENT**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Applicants request entry of the following amendments prior to calculation of the filing fee and examination of the above-identified application.

**IN THE CLAIMS:**

Marked up version of all revised claims, showing insertions and deletions, are included herewith in Appendix A. For examiner's convenience, a complete set of pending claims is attached herewith in Appendix B.

Cancel Claims 1-3, 6-7, and 9.

Rewrite Claims 4-5 and 8 as follows:

4. (Amended) A spread spectrum signal processing apparatus having a correlator for correlating a spread spectrum signal with a reference signal, and processing a correlation signal from the correlator, characterized by:

control means for controlling supply of each of divided codes sequentially to said correlator as the reference signal in accordance with the order of arrangement in a spreading code, said each of divided codes being formed by dividing the spreading code having a prescribed length and used to despread said spread signal into a plurality of divided codes; and signal processing means for summing said correlation signal output corresponding to each of the divided codes and for outputting a summed result,

wherein, said signal processing means includes a plurality of delay elements for delaying a signal by a time corresponding to a length of said divided code, and

each of said delay elements is connected in cascade, and an output of said correlator is connected to an input of each of said delay elements and to an output of a last stage of said delay elements.

5. (Amended) A spread spectrum signal processing apparatus having a correlator for correlating a spread spectrum signal with a reference signal, and processing a correlation signal from the correlator, characterized by:

control means for controlling supply of each of divided codes sequentially to said correlator as the reference signal in accordance with the order of arrangement in a spreading code, said each of divided codes being formed by dividing the spreading code having a prescribed length and used to despread said spread signal into a plurality of divided codes; and a signal processing means for summing said correlation signal output corresponding to each of the divided codes and for outputting a summed result,

wherein, said signal processing means includes a plurality of delay elements for delaying a signal by a time corresponding to a length of said divided code, and an adder for summing a delay signal from said each delay element and said correlation signal, and

each of said delay elements is connected in cascade, and an output of said correlator is connected to an input of a first stage of said delay elements.

8. (Amended) A spread spectrum signal processing apparatus having a correlator for correlating a spread spectrum signal with a reference signal, and processing a correlation signal from the correlator, characterized by:

control means for controlling supply of each of divided codes sequentially to said correlator as the reference signal in accordance with the order of arrangement in a spreading code, said each of divided codes being formed by dividing the spreading code having a prescribed length and used to despread said spread signal into a plurality of divided codes; and signal processing means for summing said correlation signal output corresponding to each of the divided codes and for outputting a summed result,

wherein, said control means, until a peak of said correlation signal is detected, generates a divided code of a prescribed order in the arrangement order of said spreading code among the divided codes as said reference signal successively, said divided codes being obtained by dividing into a plurality of divided codes the spreading code of a prescribed length used to despread said spread signal, and after a peak of said correlation signal is detected, generates each of said divided codes in sequence as said reference signal successively from the next of said prescribed order.

Add new Claims 10-13 as follows:

-- 10. (New) The spread spectrum signal processing apparatus according to claim 8, characterized in that:

said signal processing means comprises an A/D converter for converting said correlation signal into a digital signal, memory means for storing the digital signal from said A/D converter as data signal, and signal processor for summing said digital data corresponding to said each of the divided codes and for outputting the summed result, and

said signal processor starts the summing of said digital data by making reference to the time at which said control means supplies said divided code to said correlator. --

-- 11. (New) The spread spectrum signal processing apparatus according to any one of claims 4, 5, 8 and 10, characterized in that;

    said each of said divided codes is constituted to have an identical length. --

-- 12. (New) The spread spectrum signal processing apparatus according to any one of claims 4, 5, 8, and 10, characterized in that:

    said correlator is a surface acoustic wave convolver, and

    said each of the divided code has the same length as or shorter length than an interaction length of said convolver. --

-- 13. (New) A spread spectrum communication system for performing communication using a spread spectrum signal between at least two communication equipments, characterized in that:

    said communication equipment comprises synchronization detecting means for performing synchronization recognition of said spread signal, and despreading means for performing despreading on said spread signal by making reference to a synchronization recognition signal from said synchronization detecting means, and

    said spread spectrum signal processing apparatus according to any one of claims 4, 5, 8, and 10 is applied to either of said synchronization detecting means or said despreading means. --

**REMARKS**

Claims 4-5, 8, and 10-13 are in the case. Claims 4-5 and 8 have been amended. Claims 1-3, 6-7, and 9 have been canceled. New claims 10-13 have been added.

All amendments are generally supported. Specifically, support to the amendments can be found, for example, in the original PCT claims. No new matter has been added.

The estimated filing fee of \$980 is believed to be due for this submission. Duplicate copy of the fee sheet is enclosed herewith. Should any fee(s) be required, please charge such fee(s) to Deposit Account No. 16-1150.

Respectfully submitted,

Date April 5, 2001

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Enclosures